WHAT IS CLAIMED IS:

1. A method of manufacturing a metallic foam from a bulk-solidifying amorphous alloy comprising:

providing a molten bulk-solidifying amorphous alloy;

introducing a plurality of gas bubbles, having an internal bubble pressure, to the molten alloy at a temperature about the liquidus temperature of the alloy to form a precursor;

at least partially cooling the precursor at a cooling rate such that the molten alloy substantially maintains its amorphous state; and

expanding the bubbles in the precursor by providing a pressure gradient to the precursor where the pressure during expansion is lower than the bubble pressure during the precursor forming.

2. The method of claim 1, further comprising quenching the expanded precursor after expanding the bubbles, where the quenching is conducted at a cooling rate such that the at least a partial amorphous atomic structure is formed in the metallic foam object.

3. The method according to claim 1, wherein the precursor is cooled to below the glass transition temperature sufficiently fast to form a solidified precursor material with substantially amorphous atomic structure, and further comprising heating the solid precursor material into the super-cooled region of the bulk-solidifying amorphous alloy to expand the bubbles.

4. The method according to claim 1, wherein the temperature of the precursor is reduced to within the supercooled region of the bulk solidifying amorphous alloy during cooling sufficiently fast to avoid any substantial crystallization.

5. The method according to claim 1, wherein the gas bubbles are introduced to the molten alloy by mechanically generated in the molten alloy.

6. The method according to claim 1, wherein the gas bubbles are introduced to the molten alloy through in gas form through a nozzle.

7. The method according to claim 1, wherein the gas bubbles are introduced to the molten alloy by adding an gas releasing agent to the molten alloy.

8. The method according to claim 1, wherein a volume fraction of < 30% of a plurality of bubbles having sizes between 1 μm and 1mm are introduced to the molten alloy to form a precursor.

9. The method according to claim 1, wherein at least 50% by volume of the metallic foam has an amorphous atomic structure.

10. The method according to claim 1, further including homogenizing the size distribution of the bubbles in the precursor by making use of the size dependent floatation velocity.

11. The method according to claim 1, wherein the step of introducing gas bubbles to form the precursor occurs at a pressure of about 50 bar or more.

12. The method according to claim 1, wherein the precursor in a temperature range to have a viscosity of about 10^6 Pa·s to 10^{12} Pa·s during the expanding step.

13. The method according to claim 1, wherein the expansion of the precursor is carried out in one of either a mold or cast having a desired shape.

14. The method according to claim 1, wherein the bubbles of the metallic foam have a size distribution of about 10 μm.

15. The method according to claim 1, wherein the bulk solidifying amorphous alloy is a Zr-base amorphous alloy.

16. The method according to claim 1, wherein the bulk solidifying amorphous alloy has a ΔT of at least 60 °C.

17. The method according to claim 1, wherein the bulk solidifying amorphous alloy is an Fe-base amorphous alloy.

18. The method according to claim 1, wherein the plurality of bubbles are one of either close or open celled.

19. A metallic foam made from a bulk solidifying amorphous alloy made in accordance with the method described in claim 1.

20. The metallic foam according to claim 19, where 95% (by volume) of the bubbles are less than 2 mm in diameter.

21. The metallic foam according to claim 19, where 95% (by volume) of the bubbles are less than 200 micron in diameter.

22. The metallic foam according to claim 19, wherein the volume fraction of bubbles is more 30 %.

23. The metallic foam according to claim 19, wherein the volume fraction of bubbles is more 90 %.

24. The metallic foam according to claim 19, where a characteristic dimension of more than 95% (by volume) of the bubbles deviate less than 100% from the average characteristic dimension of the bubbles.

25. The metallic foam according to claim 19, where a characteristic dimension of more than 95% (by volume) of the bubbles deviates less than 50% from the average characteristic dimension of the bubbles.

26. The metallic foam according to claim 19, where the characteristic dimension of more than 95% (by volume) of the bubbles deviates less than 100% from the median characteristic dimension of the bubbles.

27. The metallic foam according to claim 19, where the foam is foamed into its final net-shape.

28. The metallic foam according to claim 19, where the foam is formed with a solid outer skin.

29. The metallic foam according to claim 19, where the foam has a thickness of at least 1 mm and a substantially amorphous structure.